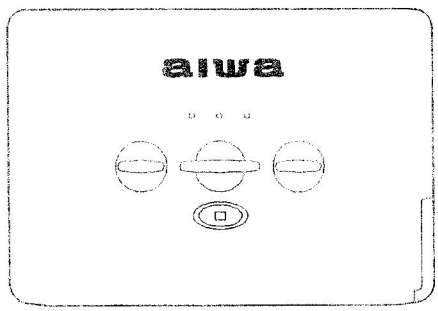
aiwa

aiwa SERVICE

# HS-GX45




STEREO CASSETTE PLAYER

SERVICE MANUAL

• BASIC TAPE MECHANISM: 5ZM-2 P1 • TYPE: AE1.AK1

## SPECIFICATIONS

| | |
|---|---|
| **Maximum output:** | 5 mW + 5 mW (EIAJ 16 Ω)<br>3 mW + 3 mW (EIAJ 32 Ω) |
| **Power source:** | DC 1.2V using supplied MHB-3 rechargeable battery,<br>DC 1.5V using size AA(R6P) dry cell battery,<br>AC 110-120V/220-240V using an AC adaptor. |
| **Battery life (EIAJ 1mW output):** | Using a fully charged MHB-3 rechargeable battery, approx. 15 hours, Using size AA (R6P) alkaline battery, approx. 30 hours |
| **Maximum dimensions:** | 112 (W) × 80 (H) × 20.7 (D) mm<br>(4 2/1 × 3 1/4 × 27/32 in.) |
| **Weight:** | Approx. 190g, (0.42 lbs) including rechargeable battery |

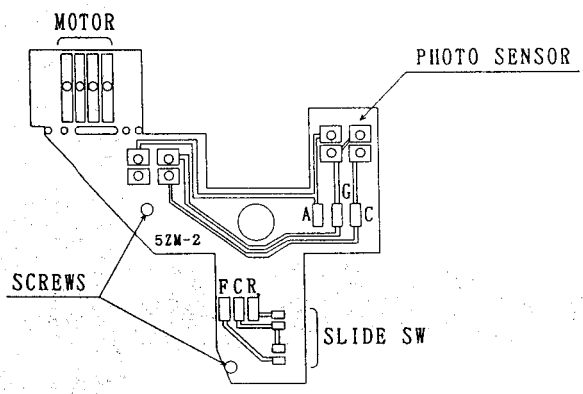
* Design and specifications are subject to change without notice.

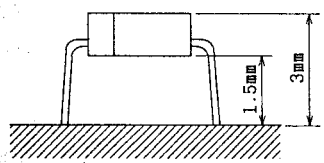
S/M Code No. 09-968-155-70I

## CAUTIONS WHEN REPAIRING

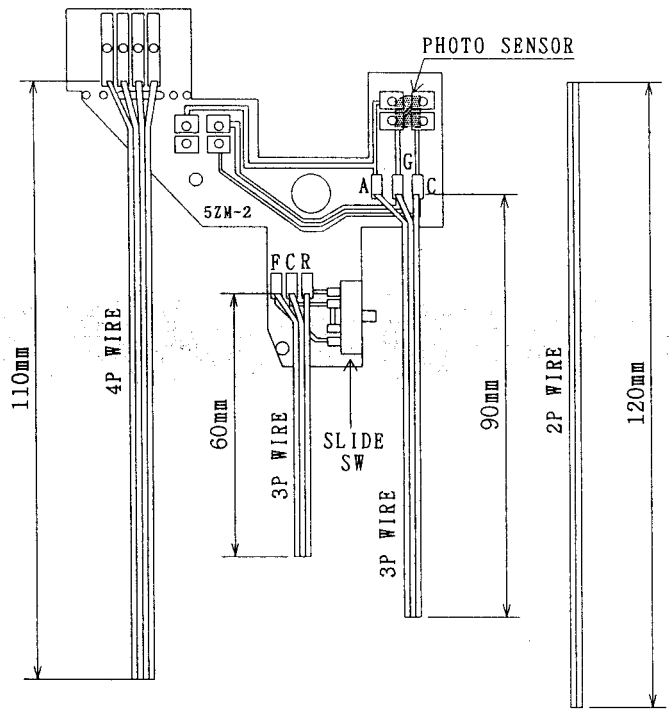
If the main board is opened while repairing the unit, operations cannot be checked since the motor terminals, etc. are soldered.
Use a jig (for the 5ZM-2) to check operation with the main board opened.
Part Name: JIG, KIT 5ZM-2 Part No.: SV-J00-006-010

1) Assembling the Jig
Assemble the jig, referring to the following diagram.
① Divide the 12-pin cable to create one 4-pin wire, two 3-pin wires and one 2-pin wire.
② Solder a photosensor to the jig board lifting it approx. 1.5mm above the board.
③ Soder a slide SW (F/R SW) to the jig board.
④ Solder each wire to the soldered sections as shown in the diagram.




Height of photosensor when attached




Jig Completion Diagram

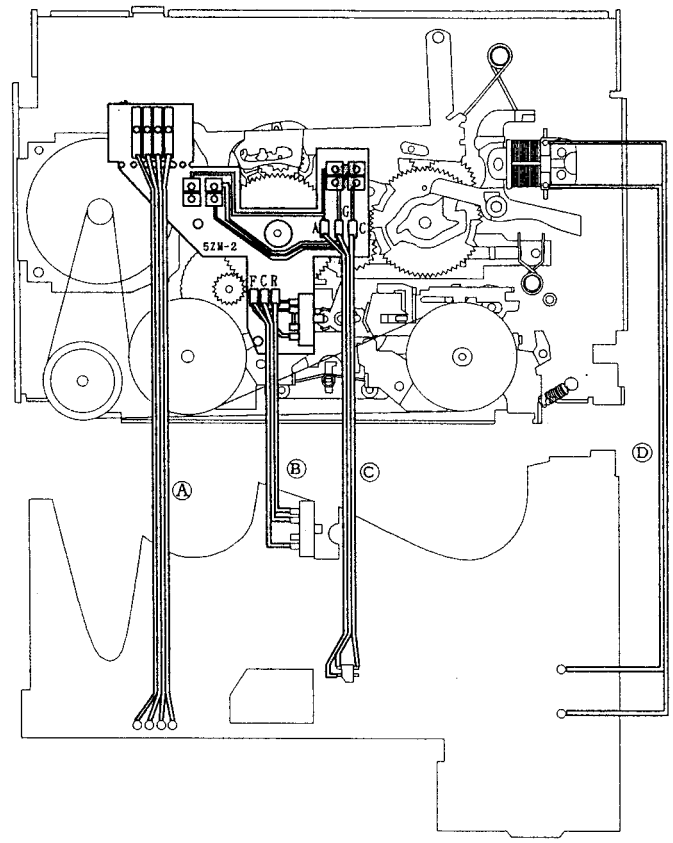
2) Attaching the Jig

① Fix the jig board to mechanism using the main board retaining screws.
② Soder the motor terminals.
③ Solder wire Ⓐ for the motor to the motor terminals.
④ Solder wire Ⓑ for the F/R SW to each terminal (FCR) of the F/R SW on the main board.
⑤ Solder wire Ⓒ for the photosensor to the photosensor on the main board.
⑥ Solder 2-pin wire Ⓓ to the plunger and the plunger terminal on the main board.

3) Using the Jig

When the board is opened, the operation switches are at the back of the board. To increase working efficiency, use the remote control to operate the unit.

① Connect the remote control to the main unit.
② Short the cassette switch terminals.
③ Slide the F/R SW on the main board to its center.




Caution: Tighten the screws so the board is parallel to the mechanism. If the board is not flat the photosensor may not operate.

# ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

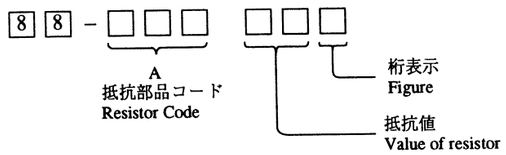
| REF. NO | PART NO. | カンリ NO. | DESCRIPTION |
|---|---|---|---|
| IC | | | |
| | 87-A20-098-010 | | C-IC,TA2072F |
| | 87-A20-211-010 | | C-IC,MB89133L-310 |
| | 87-070-449-040 | | C-IC,LB1679V |
| | 87-070-448-040 | | C-IC,MPC1850SVM |
| | 87-070-450-040 | | C-IC,MM1209XWBE |
| | 87-A20-089-040 | | C-IC,PST9011 |
| | 87-A20-090-040 | | C-IC,PST9010 |
| | 87-A20-088-080 | | C-IC,PST9017 |
| | 87-A20-195-040 | | C-IC,XC6381A221PL |
| TRANSISTOR | | | |
| | 89-341-165-080 | | C-TR,2SC4116GR |
| | 87-026-481-080 | | C-TR,RN4607 |
| | 87-A30-025-070 | | C-TR,2SD1935-6 |
| | 87-A30-024-070 | | C-TR,2SB1302S |
| | 89-212-184-080 | | C-TR,2SB1218A |
| | 87-026-418-080 | | C-TR,RN1311 |
| | 87-026-423-080 | | C-TR,RN2305 |
| | 89-113-625-080 | | C-TR,2SA1362GR |
| DIODE | | | |
| | 87-001-165-080 | | C-DIODE,1SS300 |
| | 87-070-340-080 | | C-LED,LT1D97A RED |
| | 87-070-339-080 | | C-LED,LT1S97A ORN |
| | 87-070-341-080 | | C-LED,LT1E97A GRN |
| | 87-001-166-080 | | C-DIODE,1SS301 |
| | 87-001-553-080 | | C-DIODE,1SS322 |
| MAIN C.B | | | |
| C1 | 87-012-273-080 | | C-CAP,U 820P-50 K B |
| C2 | 87-012-273-080 | | C-CAP,U 820P-50 K B |
| C3 | 87-012-273-080 | | C-CAP,U 820P-50 K B |
| C4 | 87-012-273-080 | | C-CAP,U 820P-50 K B |
| C5 | 87-A10-031-080 | | C-CAP,U 0.01-25 K B |
| C6 | 87-A10-031-080 | | C-CAP,U 0.01-25 K B |
| C9 | 87-010-828-080 | | C-CAP,U 0.033-16 Z F |
| C10 | 87-010-828-080 | | C-CAP,U 0.033-16 Z F |
| C11 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C12 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C13 | 87-016-526-080 | | C-CAP,S 0.47-16 BK |
| C14 | 87-016-526-080 | | C-CAP,S 0.47-16 BK |
| C15 | 87-A10-031-080 | | C-CAP,U 0.01-25 K B |
| C16 | 87-A10-031-080 | | C-CAP,U 0.01-25 K B |
| C17 | 87-012-142-080 | | C-CAP,S 0.33-16 Z F |
| C18 | 87-012-142-080 | | C-CAP,S 0.33-16 Z F |
| C19 | 87-010-987-080 | | C-CAP,S 1500P-50 J CH |
| C20 | 87-010-987-080 | | C-CAP,S 1500P-50 J CH |
| C21 | 87-012-285-080 | | C-CAP,U 8200P-25 K B |
| C22 | 87-012-285-080 | | C-CAP,U 8200P-25 K B |
| C23 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C24 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C25 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C27 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C28 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C29 | 87-012-274-080 | | C-CAP,U 1000P-50 K B |
| C30 | 87-012-274-080 | | C-CAP,U 1000P-50 K B |
| C31 | 87-A10-031-080 | | C-CAP,U 0.01-25 K B |
| C32 | 87-A10-031-080 | | C-CAP,U 0.01-25 K B |
| C33 | 87-012-358-080 | | C-CAP,S 0.47-10 Z F |
| C34 | 87-012-358-080 | | C-CAP,S 0.47-10 Z F |
| C35 | 87-A10-195-080 | | C-CAP,S 3.3-16 Z F |
| C36 | 87-A10-195-080 | | C-CAP,S 3.3-16 Z F |
| C37 | 87-A10-004-080 | | C-CAP,TN 220-2.5 (C) |
| C38 | 87-A10-004-080 | | C-CAP,TN 220-2.5 (C) |
| C41 | 87-012-141-080 | | C-CAP,S 0.22-16 Z F |
| C43 | 87-010-831-080 | | C-CAP,U 0.1-16 Z F |
| C45 | 87-012-141-080 | | C-CAP,S 0.22-16 Z F |
| C46 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C48 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C49 | 87-012-141-080 | | C-CAP,S 0.22-16 Z F |
| C50 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C51 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C52 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C53 | 87-012-359-080 | | C-CAP,S 0.68-10 Z F |
| C54 | 87-012-359-080 | | C-CAP,S 0.68-10 Z F |
| C55 | 87-010-424-080 | | C-CAP,TN 4.7-4 ECS |
| C56 | 87-A10-195-080 | | C-CAP,S 3.3-16 Z F |
| C57 | 87-012-358-080 | | C-CAP,S 0.47-10 Z F |
| C58 | 87-010-746-080 | | C-CAP,TN 10-4 M 125 |
| C59 | 87-010-746-080 | | C-CAP,TN 10-4 M 125 |
| C60 | 87-016-296-080 | | C-CAP,TN 22-4 M |
| C61 | 87-010-424-080 | | C-CAP,TN 4.7-4 ECS |
| C62 | 87-016-296-080 | | C-CAP,TN 22-4 M |
| C63 | 87-010-424-080 | | C-CAP,TN 4.7-4 ECS |
| C65 | 87-A10-194-080 | | C-CAP, 2.2-16 Z F |
| C66 | 87-A10-194-080 | | C-CAP, 2.2-16 Z F |
| C71 | 87-010-831-080 | | C-CAP,U 0.1-16 Z F |
| C72 | 87-A10-034-080 | | C-CAP,TN 33-10 (B2) |
| C73 | 87-010-746-080 | | C-CAP,TN 10-4 M 125 |
| C74 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C75 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C76 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C78 | 87-010-831-080 | | C-CAP,U 0.1-16 Z F |
| C79 | 87-010-831-080 | | C-CAP,U 0.1-16 Z F |
| C80 | 87-010-784-080 | | C-CAP,U 0.012-25 K B |
| C81 | 87-010-784-080 | | C-CAP,U 0.012-25 K B |
| C82 | 87-010-784-080 | | C-CAP,U 0.012-25 K B |
| C83 | 87-010-989-080 | | C-CAP,S 2200P-50 J CH |
| C84 | 87-010-596-080 | | C-CAP,S 0.047-16 K R |
| C85 | 87-016-081-080 | | C-CAP,S 0.1-16 K R |
| C86 | 87-010-274-080 | | C-CAP,TN 3.3-4 ECS |
| C87 | 87-012-278-080 | | C-CAP,U 2200P-50 K B |
| C88 | 87-010-992-080 | | C-CAP,S 0.047-25 J B |
| C91 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C92 | 87-A10-019-080 | | C-CAP,TN 10-6.3 A SV-M |
| C93 | 87-A10-019-080 | | C-CAP,TN 10-6.3 A SV-M |
| C94 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C95 | 87-A10-031-080 | | C-CAP,U 0.01-25 K B |
| C96 | 87-010-829-080 | | C-CAP,U 0.047-16 Z F |
| C97 | 87-016-462-080 | | C-CAP,S 1-16 Z F |
| C98 | 87-A10-030-080 | | C-CAP,U 100P-50 CH |
| C99 | 87-016-296-080 | | C-CAP,TN 22-4 M |
| C100 | 87-010-829-080 | | C-CAP,U 0.047-16 Z F |
| C101 | 87-010-746-080 | | C-CAP,TN 10-4 M 125 |
| C103 | 87-012-274-080 | | C-CAP,U 1000P-50 K B |
| C104 | 87-012-274-080 | | C-CAP,U 1000P-50 K B |
| C105 | 87-012-274-080 | | C-CAP,U 1000P-50 K B |
| C106 | 87-012-274-080 | | C-CAP,U 1000P-50 K B |
| C107 | 87-012-274-080 | | C-CAP,U 1000P-50 K B |
| J1 | 85-HK3-605-010 | | JACK,DIA3.5 ST 5P |
| L3 | 87-005-906-080 | | C-COIL,S 10UH K LK2125 |
| L4 | 87-A50-008-080 | | C-COIL, 330UH K NLFC322522 |
| P1 | 87-026-504-010 | | SNSR,PHOTO NJL5164KF |
| R11 | 87-022-436-080 | | C-RES,U 390-1/16W F |
| R12 | 87-022-436-080 | | C-RES,U 390-1/16W F |
| R19 | 87-022-251-080 | | C-RES,U 33K-1/16W F |
| R20 | 87-022-251-080 | | C-RES,U 33K-1/16W F |
| R21 | 87-022-251-080 | | C-RES,U 33K-1/16W F |
| R22 | 87-022-251-080 | | C-RES,U 33K-1/16W F |
| R31 | 87-022-229-080 | | C-RES,U 3.9K-1/16W F |
| R61 | 87-022-254-080 | | C-RES,U 43K-1/16W F |
| R75 | 87-022-247-080 | | C-RES,U 22K-1/16W F |
| R76 | 87-022-247-080 | | C-RES,U 22K-1/16W F |
| R80 | 87-022-219-080 | | C-RES,U 1.5K-1/16W F |
| R81 | 87-022-215-080 | | C-RES,U 1K-1/16W F |

| REF. NO | PART NO. | カンリ NO. | DESCRIPTION |
|---|---|---|---|
| R82 | 87-022-215-080 | | C-RES,U 1K-1/16W F |
| R83 | 87-022-215-080 | | C-RES,U 1K-1/16W F |
| SFR1 | 87-024-601-080 | | C-SFR,K 330K H TMC3K |
| SW1 | 85-HK3-606-010 | | SW,LEAF (5ZM-2) |
| SW2 | 87-036-428-080 | | C-SW,SL 1-1-2 SSQ |
| SW3 | 87-036-427-080 | | C-SW,SL 1-1-3 MHT |
| SW4 | 87-036-426-080 | | C-SW,PUSH-2-7 SPPW9 |
| SW5 | 87-036-308-080 | | C-SW,TACT 112HST |
| SW6 | 87-036-308-080 | | C-SW,TACT 112HST |
| SW7 | 87-036-308-080 | | C-SW,TACT 112HST |
| SW8 | 87-036-308-080 | | C-SW,TACT 112HST |
| SW9 | 87-036-428-080 | | C-SW,SL 1-1-2 SSQ |
| SW10 | 87-036-428-080 | | C-SW,SL 1-1-2 SSQ |
| SW11 | 87-036-203-080 | | C-SW,SL 1-1-3 SSSS81 |
| VR1 | 87-A90-116-080 | | C-VR,RTRY 20KCX2 XV0103 |
| X1 | 87-A70-008-080 | | C-VIB,CER 3.00MHZ CSTCS-MG0C5 |

| REF. NO | PART NO. | カンリ NO. | DESCRIPTION |
|---|---|---|---|
| REGULATOR C.B | | | |
| C200 | 87-016-045-080 | | CAP,E 1000-6.3 SMG |
| J2 | 87-A60-023-010 | | JACK,DC DIA2.5 (L) |
| R200 | 87-022-569-080 | | C-RES,0.47-1/2W K |
| HEAD FLEX C.B | | | |
| PH1 | 85-HK3-603-010 | | HEAD,ASSY |

○ チップ抵抗部品コード／CHIP RESISTOR PART CODE

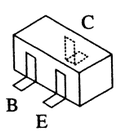
チップ抵抗部品コードの成り立ち
Chip Resistor Part Coding



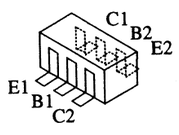

チップ抵抗
Chip resistor

| 容量 Wattage | 種類 Type | 許容誤差 Tolerance | 記号 Symbol | 寸法／Dimensions (mm) 外形／Form | L | W | t | 抵抗コード ：A Resistor Code: A |
|---|---|---|---|---|---|---|---|---|
| 1／16W | 1608 | ±5% | CJ | | 1.6 | 0.8 | 0.45 | 108 |
| 1／10W | 2125 | ±5% | CJ | | 2 | 1.25 | 0.45 | 118 |
| 1／8W | 3216 | ±5% | CJ | | 3.2 | 1.6 | 0.55 | 128 |

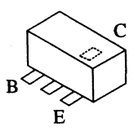
## TRANSISTOR ILLUSTRATION




2SA1362
2SB1218
2SC4116
2SD1935
RN1311
RN2305




RN4607

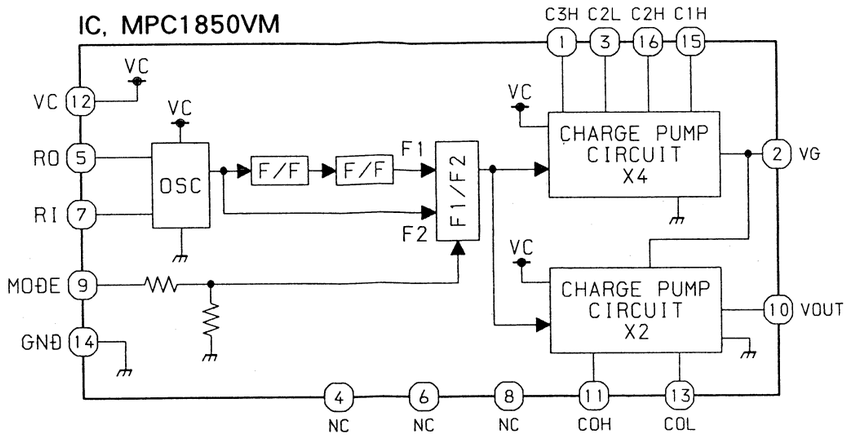



2SB1302

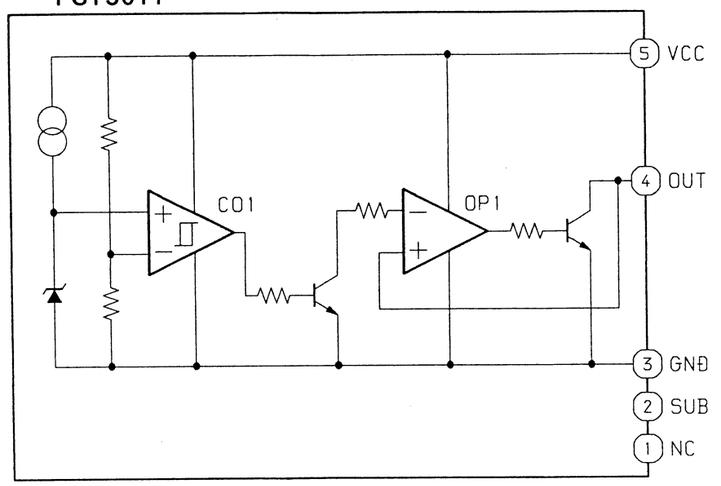


## IC BLOCK DIAGRAM

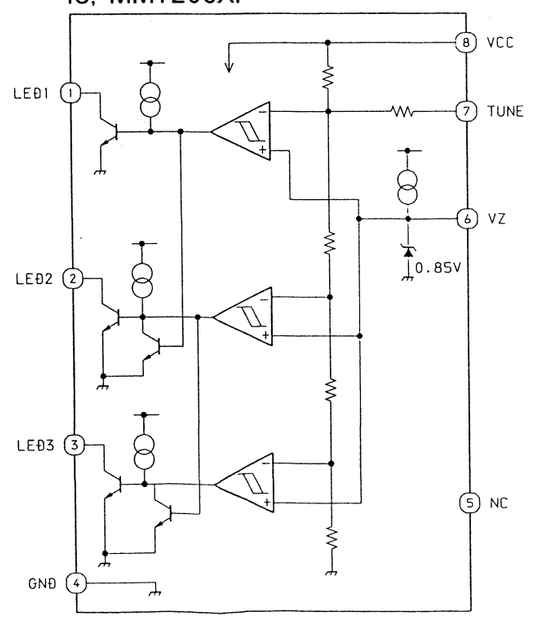
IC, MPC1850VM

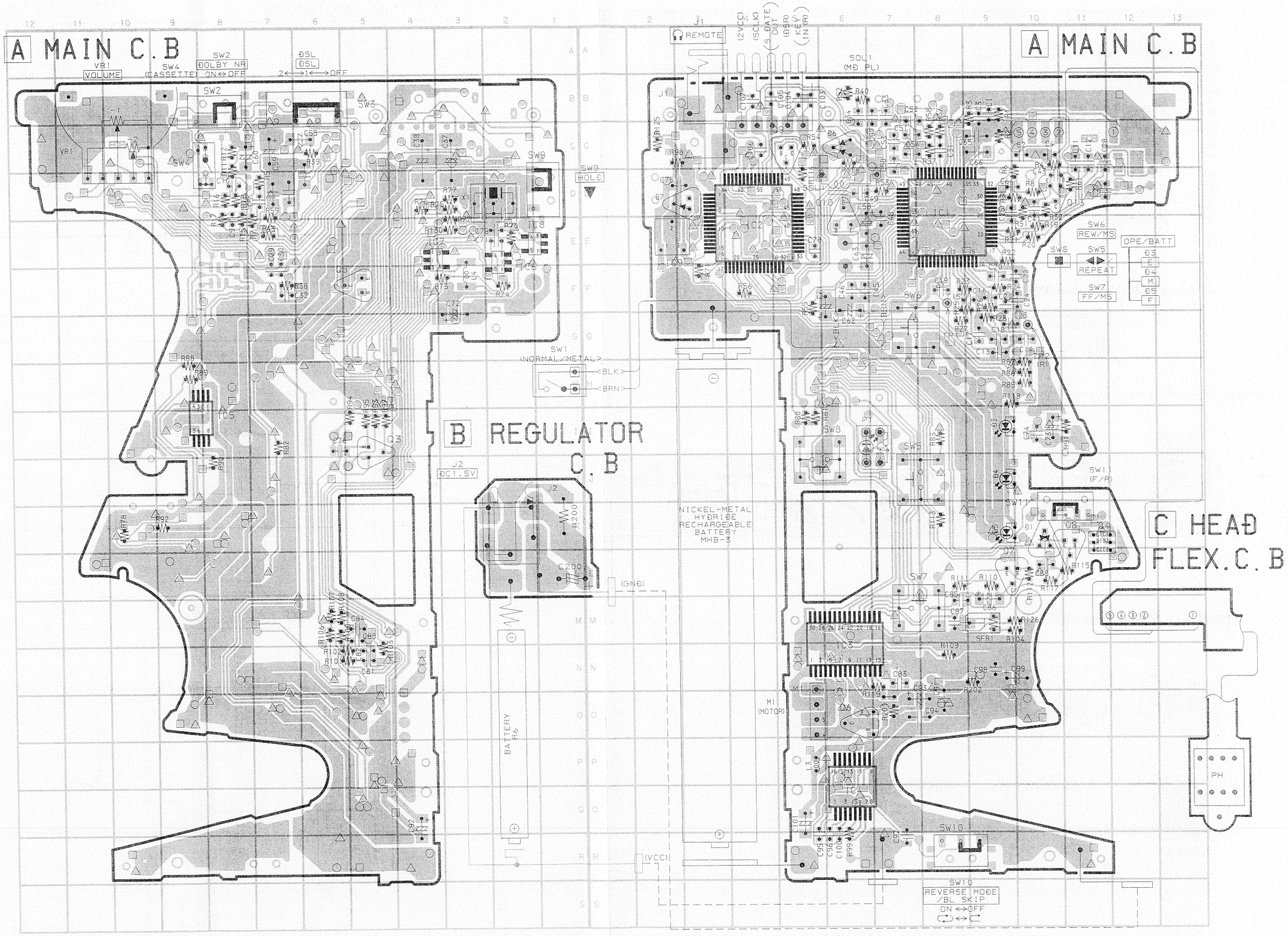


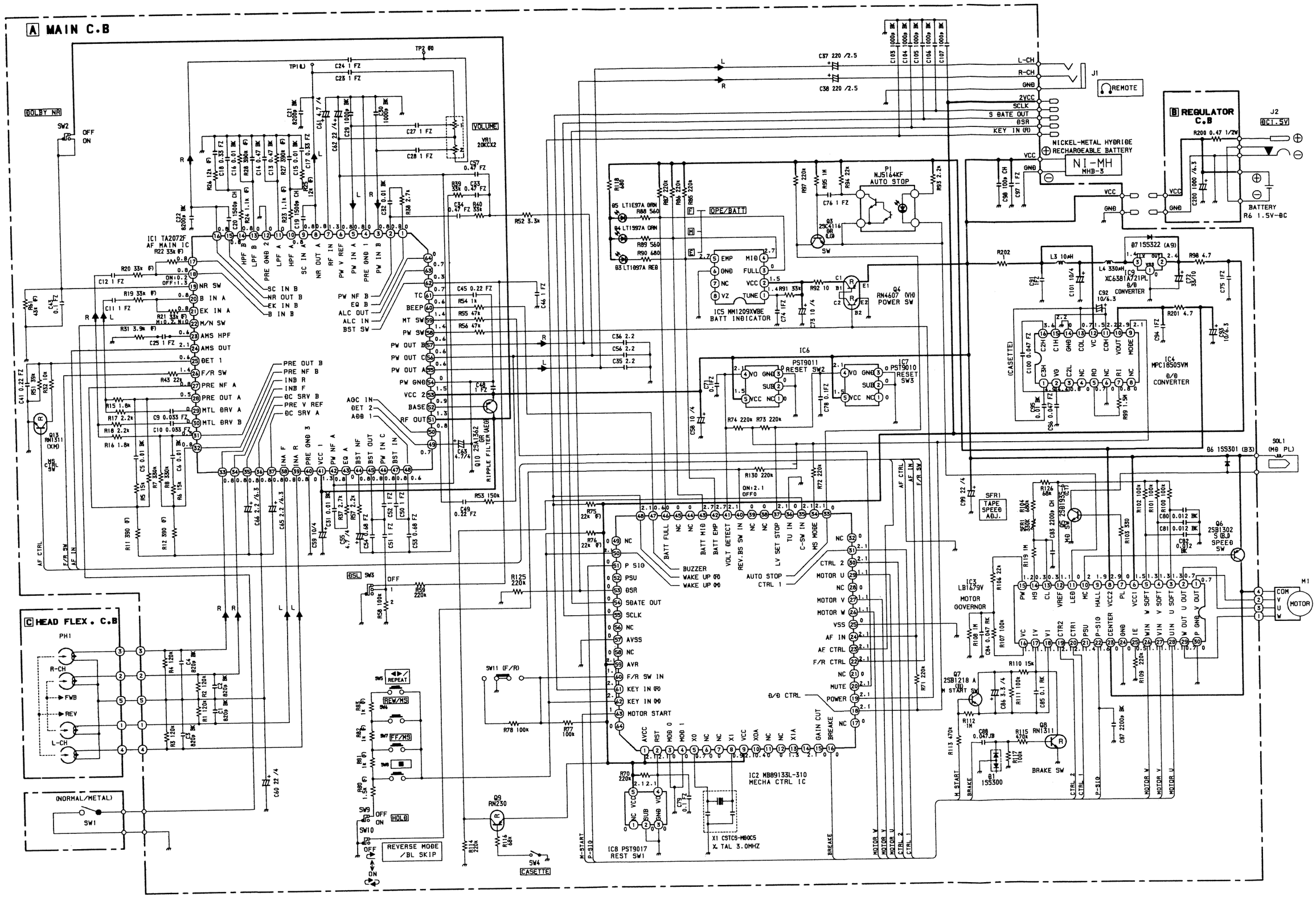

IC, PST9010
PST9011
PST9017




IC, MM1209XF




A MAIN C.B
VR1
VOLUME
SW4
(CASSETTE)
SW2
DOLBY NR
ON⇔OFF
DSL
DSL
2⇔1⇔OFF
SW3
SW9
SW9
HOLE
SW1
(NORMAL/METAL)
BLK
BRN
B REGULATOR
C.B
J2
DC1.5V
J2
R200
C200
(GND)
BATTERY
R6
NICKEL-METAL
HYDRIDE
RECHARGEABLE
BATTERY
MHB-3
(VCC)
A MAIN C.B
REMOTE
(2VCC)
(SCLK)
(S.DATE
OUT
(DSR)
(KEY
IN(R)
SOL1
(MD PL)
SW6
REW/MS
SW5
REPEAT
SW7
FF/MS
SW8
OPE/BATT
D3
E
D4
MI
D5
F1
SW11
(F/R)
C HEAD
FLEX.C.B
PH
M1
(MOTOR)
SW10
REVERSE MODE
/BL SKIP
ON⇔OFF


A MAIN C.B
B REGULATOR C.B
C HEAD FLEX . C.B
DOLBY NR
SW2
OFF
ON
VOLUME
VR1 20KCX2
IC1 TA2072F
AF MAIN IC
R22 33k (F)
SC IN B
NR OUT B
EK IN B
B IN A
NR SW
EK IN A
M/N SW
AMS HPF
AMS OUT
ØET 1
F/R SW
PRE NF A
PRE OUT A
MTL ØRV A
MTL ØRV B
PRE OUT B
PRE NF B
INB R
INB F
ØC SRV B
PRE V REF
ØC SRV A
PW NF B
EQ B
ALC OUT
ALC IN
BST SW
AØC IN
ØET 2
AØØ 1
RF OUT
RIPPLE FILTER(AEC)
Q10 2SA1362 OR 2SA1586
Q13 RN1311 (XM)
Q9 RN230
PH1
R-CH
FWB
REV
L-CH
(NORMAL/METAL)
SW1
SW3 OFF
SW4 CASETTE
SW5 REPEAT
SW6 REW/MS
SW7 FF/MS
SW8
SW9 OFF ON HOLD
SW10 OFF ON
SW11 (F/R)
REVERSE MODE /BL SKIP
L-CH
R-CH
GNØ
2VCC
SCLK
S ØATE OUT
ØSR
KEY IN (R)
J1
REMOTE
NICKEL-METAL HYDRIØE RECHARGEABLE BATTERY
NI-MH MHB-3
VCC
GNØ
J2
ØC1.5V
BATTERY R6 1.5V-ØC
R200 0.47 1/2W
C200 1000 /6.3
OPE/BATT
LT1E97A ORN
LT1097A ORN
LT1097A REØ
IC5 MM1209XWBE
BATT INDICATOR
P1 NJ5164KF AUTO STOP
Q3 2SC4116 ØR 2SC2412K
SW
Q4 RN4607 (VH) POWER SW
D7 1SS322 (A9)
L4 330uH
IC9 XC6381A721PL Ø/Ø CONVERTER
L3 10uH
R202
R98 4.7
R201 4.7
IC4 MPC1850SVM Ø/Ø CONVERTER
(CASSETTE)
IC6 PST9011 RESET SW2
IC7 PST9010 RESET SW3
D6 1SS301 (B3)
SOL1 (MØ PL)
SFR1 TAPE SPEEØ ADJ.
Q6 2SB1302 S ØBJ SPEEØ SW
IC3 LB1679V MOTOR GOVERNOR
M1 MOTOR
Q7 2SB1218 A (R) M START SW
Q8 RN1311
BRAKE SW
D1 1SS300
IC2 MB89133L-310 MECHA CTRL IC
IC8 PST9017 REST SW1
X1 CSTCS-MØC5 X TAL 3.ØMHZ
BUZZER
WAKE UP ØØ
WAKE UP ØØ
AUTO STOP CTRL 1
Ø/Ø CTRL
BATT FULL
BATT MIØ
BATT EMP
VOLT DETECT
REV.BS SW IN
LV SET STOP
TU IN
C-SW IN
MS MODE
P SIG
PSU
ØSR
SØATE OUT
SCLK
AVSS
AVR
F/R SW IN
KEY IN ØØ
KEY IN ØØ
MOTOR START
MOTOR U
MOTOR V
MOTOR W
VSS
AF IN
AF CTRL
F/R CTRL
MUTE
POWER
BREAKE
GAIN CUT
M-START
P-SIG
BRAKE
CTRL 2
CTRL 1
MOTOR W
MOTOR V
MOTOR U

## IC DESCRIPTION

### IC, LB1689V

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 1 | V OUT | O | V phase output |
| 2 | U OUT | O | U phase output |
| 3 | U SOFT | O | U phase soft switching pin |
| 4 | V SOFT | O | V phase soft switching pin |
| 5 | W SOFT | O | W phase soft switching pin |
| 6 | VCC1 | - | Power supply 1 0.9～1.8V |
| 7 | PL | O | PL driver output pin |
| 8 | VCC2 | - | Power supply 2 VCC×2 = 1.8～3.6V |
| 9 | HALL | O | Hall device bias output pin |
| 10 | MC | O | External transistor drive pin |
| 11 | LED | O | LED drive output pin |
| 12 | VREF | - | Reference voltage 1.1V |
| 13 | CL | I | Completer input pin |
| 14 | HS | O | CI charge current pin at half-wave drive mode |
| 15 | PW | O | Comparator output pin |
| 16 | VC | O | Buffer output pin |
| 17 | IV | O | VI conversion output pin |
| 18 | VI | O | IV conversion output pin |
| 19 | CTR2 | I | Start/stop and LED/PL switching pin |
| 20 | CTRI | I | Start/stop and LED/PL switching pin |
| 21 | PSU | O | Comparator output pin for MOTOR CENTER and U phase output |
| 22 | P-SIG | O | PSIG output pin |
| 23 | CENTER | I | PSIG block motor mid-point voltage input pin |
| 24 | GND | - | GND pin |
| 25 | IE | O | Soft switching pin current is adjusted by an external resistor |
| 26 | WIN | I | W phase input |
| 27 | VIN | I | V phase input |
| 28 | UIN | I | U phase input |
| 29 | W OUT | O | W phase input |
| 30 | P GND | - | POWER block GND pin |



### IC, MB89133L

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 1 | AVCC | - | Power pin of A/D converter |
| 2 | RST | I | Reset input pin |
| 3 | MOD 0 | I | Designate input pin of moving mod. Connected to GND |
| 4 | MOD 1 | I | Designate input pin of moving mod. Connected to GND |
| 5 | X0 | - | Oscillator connect pin. 3MHz |
| 6 | NC | - | Not used |
| 7 | NC | - | Not used |
| 8 | X1 | - | Oscillator connect pin. 3MHz |
| 9 | VCC | - | Power pin |
| 10 | XOA | - | Not used |
| 11 | NC | - | Not used |
| 12 | NC | - | Not used |
| 13 | X1A | - | Not used |
| 14 | - | - | Not used |
| 15 | GAIN CUT | O | H:MOTOR GAIN CUT ON L:MOTOR GAIN CUT OFF |
| 16 | BREAKE | O | H:MOTOR BRAKE ON L:MOTOR BRAKE OFF |
| 17 | NC | - | Not used |
| 18 | D/D CTRL | O | DC/DC convertor control pin |
| 19 | POWER | O | H:POWER ON L:POWER OFF |
| 20 | MUTE | O | H:MUTE OFF L:MUTE ON |
| 21 | NC | - | Not used |
| 22 | F/R CTRL | O | H:Move for FWD, L:Move for REV |
| 23 | AF CTRL | O | MUSIC detect level control pin |
| 24 | AF IN | I | H:have MUSIC, L:have not MUSIC |
| 25 | VSS | - | GND pin |
| 26 | MOTOR W | I/O | Motor W phase control as 3 level |
| 27 | MOTOR V | I/O | Motor V phase control as 3 level |
| 28 | NC | - | Not used |
| 29 | MOTOR U | I/O | Motor U phase control as 3 level |
| 30 | CTRL 2 | I/O | Control for starting, motor drive and PL, as logic by CTRL 1, 2 |
| 31 | CTRL 1 | I/O | Control for starting, motor drive and PL, as logic by CTRL 1, 2 |
| 32 | NC | - | Not used |
| 33 | AUTO STOP | I | Tape end detection by AC level |
| 34 | MS MODE | I | H:Can set up until 9 numbers MS, L:Can set up until 3 numbers MS |
| 35 | C-SW IN | I | H:have cassette L:have not cassette |
| 36 | TU IN | I | H:TU ON L:TU OFF |
| 37 | LV SET STOP | I | TP STOP when voltage decrease . L:TP OFF |
| 38 | NC | - | Not used |
| 39 | NC | - | Not used |

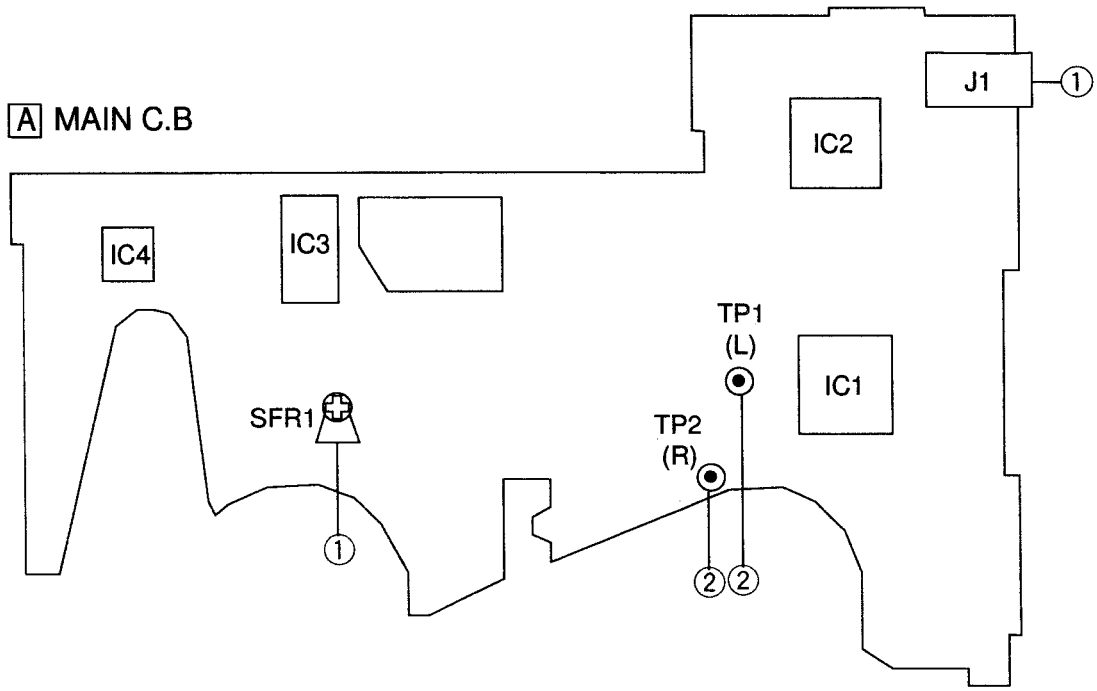
| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 40 | REB.BS SW IN | I | H: Continuation, BS OK L:A round, BS NG |
| 41 | VOLT DETECT | I | Power supply voltage detection pin. L:when decrease voltage. |
| 42 | BATT EMP | I | L:BATT EMPTY display data transmission. |
| 43 | BATT MID | I | L:BATT MID display data transmission. |
| 44 | NC | - | Not used |
| 45 | NC | - | Not used |
| 46 | BATT FULL | I | L:BATT FULL display data transmission. |
| 47 | BUZZER | O | move set up alarm output. |
| 48 | WAKE UP(R) | I | Machine control stating pin. |
| 49 | NC | - | Not used |
| 50 | WAKE UP(M) | I | Machine control stating pin. |
| 51 | P SIG | I | Drive circuit detection by pulse wave input |
| 52 | PSU | I | Not used |
| 53 | DSR | I | Mode transmission by level change |
| 54 | SDATE OUT | O | Cereal data output |
| 55 | SCLK | I | Cereal clock input |
| 56 | NC | - | Not used |
| 57 | AVSS | - | A/D convertor GND pin |
| 58 | NC | - | Not used |
| 59 | AVR | I | Reference voltage input pin of A/D convertor |
| 60 | F/R SW IN | I | H:STOP M:FWD move L:REV move |
| 61 | KEY IN(R) | I | Remote control side KEY input pin |
| 62 | KEY IN(M) | I | A machine side KEY input pin |
| 63 | MOTOR START | O | MOTOR move GAIN control |
| 64 | NC | - | Not used |
| 64 | NC | - | Not used |
| 64 | ALC OUT | I | ALC detection input. |

## IC, TA2072F

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 1 | EQ B | O | Equalizer change over circuit of power block. (BST on : move) |
| 2 | PW NF B | I | Power amplifier NF. |
| 3 | PW IN B | I | Power amplifier input. (Common a ADD amplifier input.) |
| 4 | PRE GND 1 | - | PRE GND of power port. |
| 5 | PW IN A | I | Power amplifier input. (Common a ADD amplifier input.) |
| 6 | PW V REF | - | Reference potential circuit of power port. |
| 7 | RF IN | I | Filter pin of ripple filter circuit. |
| 8 | NR OUT A | O | NR decoder output. |
| 9 | SC IN A | I | Side chain input. |
| 10 | HPF A | - | High area weight amplifier (D amplifier) |
| 11 | LPF A | - | Rectification smoothing circuit. (G amplifier) |
| 12 | PRE GND 2 | - | GND of NR. |
| 13 | LPF B | - | Rectification smoothing circuit. (G amplifier) |
| 14 | HPF B | - | High area weight amplifier (D amplifier) |
| 15 | SC IN B | I | Side chain input. |
| 16 | NR OUT B | O | NR decoder output. |
| 17 | EK IN B | I | EK amplifier input. |
| 18 | B IN B | I | Buffer amplifier input. Input pin of NR. (A way of reverse amplifier) |
| 19 | NR SW | I | ON/OFF switch of NR. |
| 20 | B IN A | I | Buffer amplifier input. Input pin of NR. (A way of reverse amplifier) |
| 21 | EK IN A | I | EK amplifier input. |
| 22 | M/N SW | I | Change over switch of Metal, Normal and Preoff mode. |
| 23 | AMS HPF | - | AMS-HPF pin. |
| 24 | AMS OUT | O | AMS comparator output. |
| 25 | DET 1 | O | Adjustment and smoothing of AMS detection level . |
| 26 | F/R SW | I | Forward / Reverse change over switch. |
| 27 | PRE NF A | I | Preamplifier NF. |
| 28 | PRE OUT A | O | Preamplifier output. |
| 29 | MTL DRVA | I | Metal mode switch. |
| 30 | MTL DRV B | I | Metal mode switch. |
| 31 | PRE OUT B | O | Preamplifier output. |
| 32 | PRE NF B | I | Preamplifier NF. |
| 33 | INB R | I | Preamplifier · Reverse input. |
| 34 | INB F | I | Preamplifier · Forward input. |
| 35 | DC SRV B | O | Preamplifier DC servo pin. |
| 36 | PRE V REF | O | Reference potential circuit of preamplifier /NR. |
| 37 | DC SRV A | O | Preamplifier DC servo pin. |
| 38 | INA F | I | Preamplifier · Forward input. |
| 39 | INA R | I | Preamplifier · Reverse input. |
| 40 | PRE GND 3 | - | GND of preamplifier. |

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 41 | VCC 1 | - | Preamplifier / VCC of NR port. |
| 42 | PW NF A | I | Power amplifier NF |
| 43 | EQ A | O | Change over circuit of power equalizer. (BST On : move) |
| 44 | BST NF | I | NF of BST amplifier. |
| 45 | BST OUT | O | Output of BST amplifier. |
| 46 | PW IN C | I | Center amplifier input. |
| 47 | BST IN | I | BST amplifier input. |
| 48 | ADD 1 | O | Output of a ADD amplifier. (Low area signal amplifier) |
| 49 | DET 2 | O | Level detection smoothing of Booster AGC. |
| 50 | AGC IN | I | Booster AGC input. |
| 51 | RF OUT | O | Ripple filter output. |
| 52 | BASE | O | Base bias pin of Ripple filter transistor. |
| 53 | VCC 2 | - | VCC of power port. |
| 54 | PW GND | - | Power GND of power amplifier. |
| 55 | PW OUT A | O | Power amplifier output. |
| 56 | PW OUT C | O | Center amplifier output. |
| 57 | PW OUT B | O | Power amplifier output. |
| 58 | PW SW | I | Power ON / OFF switch. |
| 59 | MT SW | I | Power mute switch. |
| 60 | BEEP | I | Beep sound input. |
| 61 | TC | O | Mute · smoothing |
| 62 | BST SW | I | Change over switch of booster ON / OFF. |
| 63 | ALC IN | O | ALC detection output. |
| 64 | ALC OUT | I | ALC detection input. |

# ELECTRICAL ADJUSTMENT




## ADJUSTMENT

1. Tape Speed Adjustment (FWD/REV)
   Settings : • Test selector : normal
   • DOLBY SW : OFF
   • DSL : OFF
   • Output Point : J1 (HP OUT)
   • Test tape : TTA-100
   • Adjustment location : SFR1
   Method : Play back the test tape and adjust SFR401 so that the frequency is 3015Hz±10Hz.

2. DOLBY Level Check
   Settings: • Test selector : normal
   • DOLBY SW: OFF
   • DSL: OFF
   • Output Point: TP1(L),TP2(R)
   • Output Level: MIN "0"
   • Test tape: TTA-200
   Method : Connect a test equipment to the test point via a 10μF /16V. Check that the voltage at the test point is 34mV ±1.0dB.

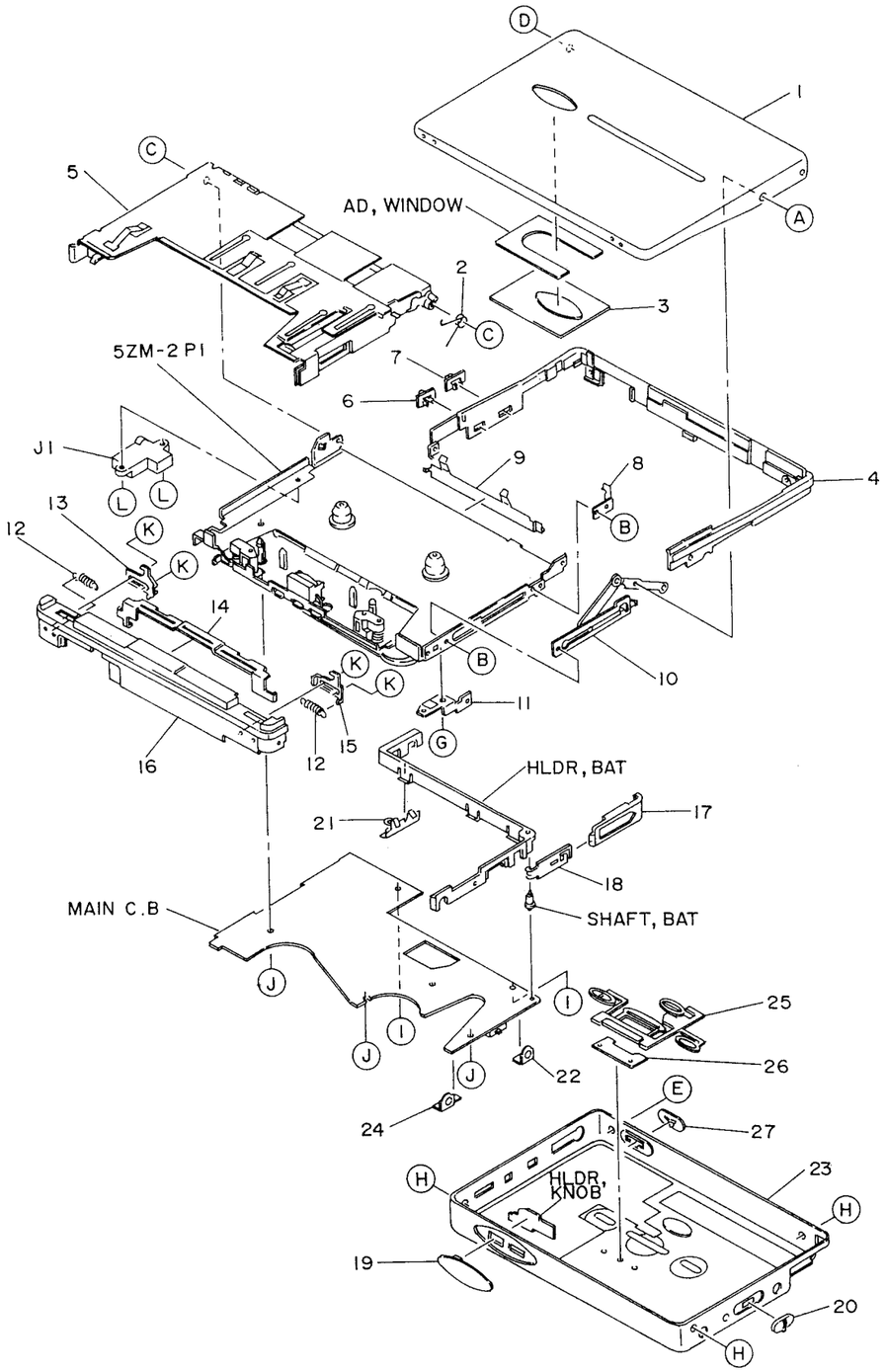
3. Azimuth Adjustment
   This set have not azimuth adjustment.

4. Battery Remaining Level Indicator Lighting Check
   Condition: Supply power to the charge terminals form a stabilized power supply.
   Method : Decrease the output of the stabilized power supply form 15V and check that each indicator lights at the following voltage.
   1.50V～1.25V F (GREEN) lights
   1.28V～1.22V M (ORANGE) lights
   1.24V～1.18V E (RED) lights
   1.20V～1.14V Indicators turn off

## PRACTICAL SERVICE FIGURE

| | |
|---|---|
| Wow & flutter : | Less than 0.47 % (RMS) |
| Take - up torque : | 18～23g-cm |
| F. F torque : | 40 ～ 70 g-cm |
| REW torque : | 40 ～ 70g-cm |
| Back tension : | 0.5～1.5g-cm |
| S/N: | More than 43dB |
| Distortion: | Less than 3.0 % |
| Noise level(PB) : | Less than 3.0 mV(VOL MAX DC) |
| | Less than 0.4 mV(VOL MIN DC) |
| Frequency response: | 63Hz±4dB～8kHz ± 4dB |

# MECHANICAL EXPLODED VIEW 1/1



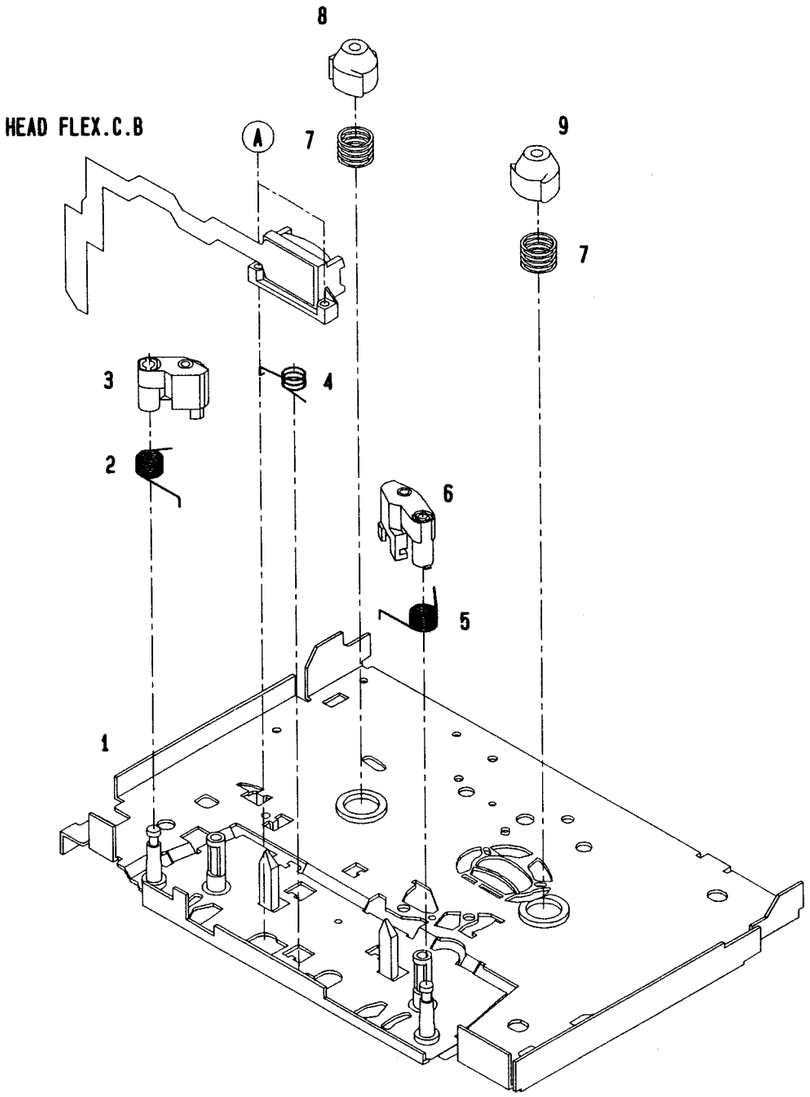


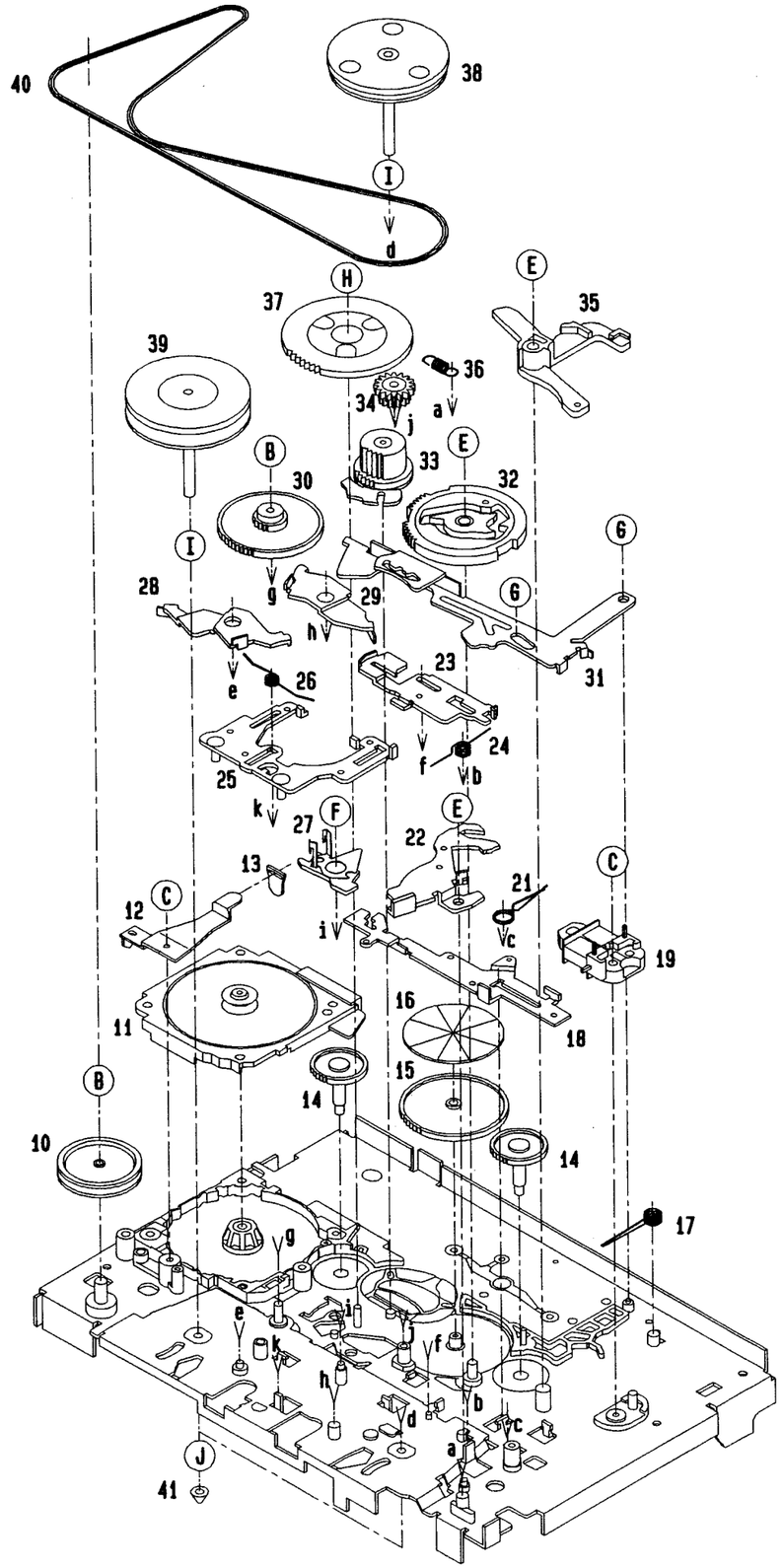

# MECHANICAL PARTS LIST 1/1

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

| REF. NO | PART NO. | カンリ NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 85-HK3-042-010 | | LID,CASS C-SIL ASSY |
| 2 | 85-HK3-211-110 | | T-SP,STOPPER |
| 3 | 85-HK3-007-010 | | WINDOW,CASS |
| 4 | 85-HK3-044-010 | | FRAME,CENTER GLD |
| 5 | 85-HK3-201-410 | | HLDR ASSY |
| 6 | 85-HK3-051-010 | | KNOB,SL D D-GRY |
| 7 | 85-HK3-050-010 | | KNOB,SL DSL D-GRY |
| 8 | 85-HK3-212-210 | | P-SP,STOPPER |
| 9 | 85-HK3-245-210 | | P-SP,CASS PUSH |
| 10 | 85-HK3-213-010 | | HINGE ASSY |
| 11 | 85-HK3-230-010 | | NUT,B-BOX |
| 12 | 85-HK3-227-110 | | E-SP,LOCK |
| 13 | 85-HK3-225-110 | | PLATE,LOCK R |
| 14 | 85-HK3-226-010 | | LINK,LOCK |
| 15 | 85-HK3-224-110 | | PLATE,LOCK L |
| 16 | 85-HK3-045-010 | | PANEL,LOCK GLD |
| 17 | 85-HK3-046-010 | | LID,BAT C-SIL |
| 18 | 85-HK3-220-110 | | BAT,CONT P |
| 19 | 85-HK3-048-010 | | KNOB,SL OPEN SIL |
| 20 | 85-HK3-052-010 | | KNOB,SL BS D-GRY |
| 21 | 85-HK3-221-010 | | BAT,CONT M |
| 22 | 85-HK3-228-110 | | TERM,BAT P |
| 23 | 85-HK3-041-010 | | CABI,REAR C-SIL |
| 24 | 85-HK3-229-010 | | TERM,BAT M |
| 25 | 85-HK3-047-010 | | KEY,CONT GLD |
| 26 | 85-HK3-009-010 | | LENS,LED |
| 27 | 85-HK3-049-010 | | KNOB,SL HLD D-GRY |
| A | 85-HK3-240-010 | | SCRW-SR,1.4-1.4CR L |
| B | 87-261-500-310 | | V+1.4-1.4 BLK |
| C | 87-078-221-010 | | S-SCREW,1.4-0.6 S |
| D | 87-078-108-010 | | S-SCREW,+1.4-1.3 SWCH/CR NLOCK |
| E | 85-HK3-241-010 | | SCRW-SR,1.4-3CR L |
| G | 87-261-502-310 | | V+1.4-1.8 |
| H | 87-078-153-010 | | S-SCREW,SERR1.4-2.5 CR |
| I | 87-078-218-010 | | S-SCREW,SERR1.4-5.3 |
| J | 87-067-732-010 | | VT2+1.4-3 CR BLK HL |
| K | 87-078-220-010 | | S-SCREW,1.4-0.6 B |
| L | 87-067-480-010 | | S-SCREW,+1.4-3 SWCH/CR BLK |

TAPE MECHANISM EXPLODED VIEW 1/1



# TAPE MECHANISM PARTS LIST 1／1

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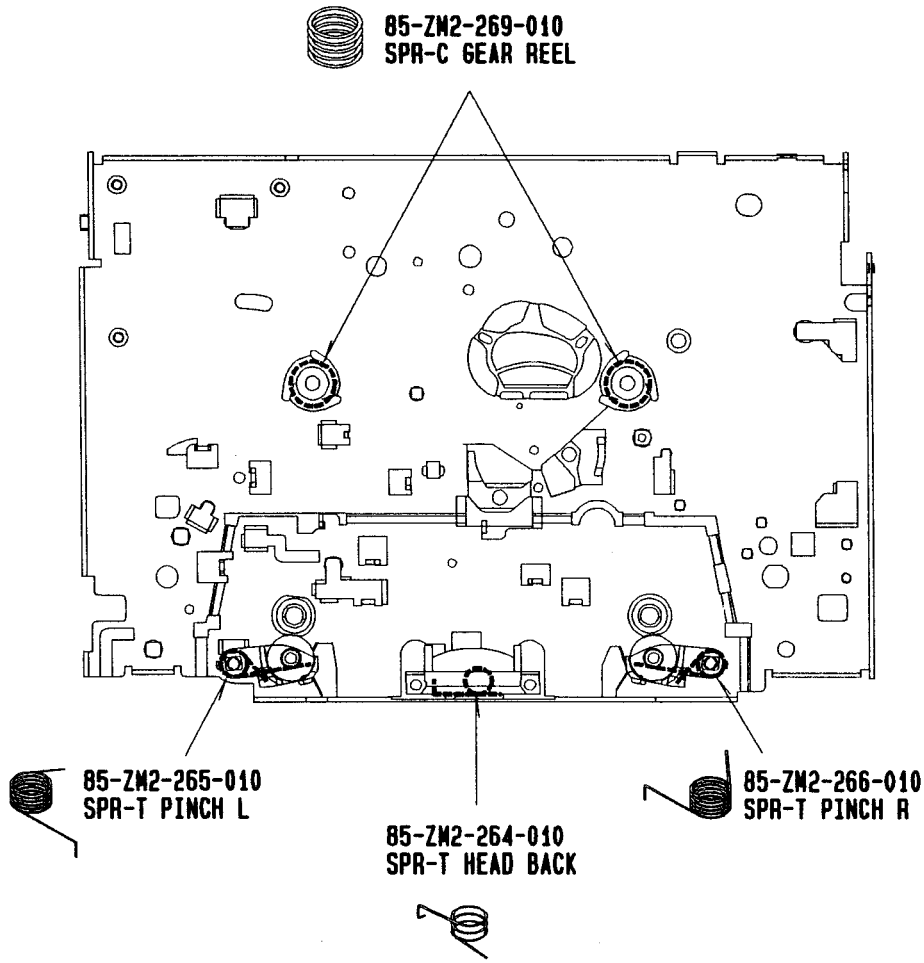
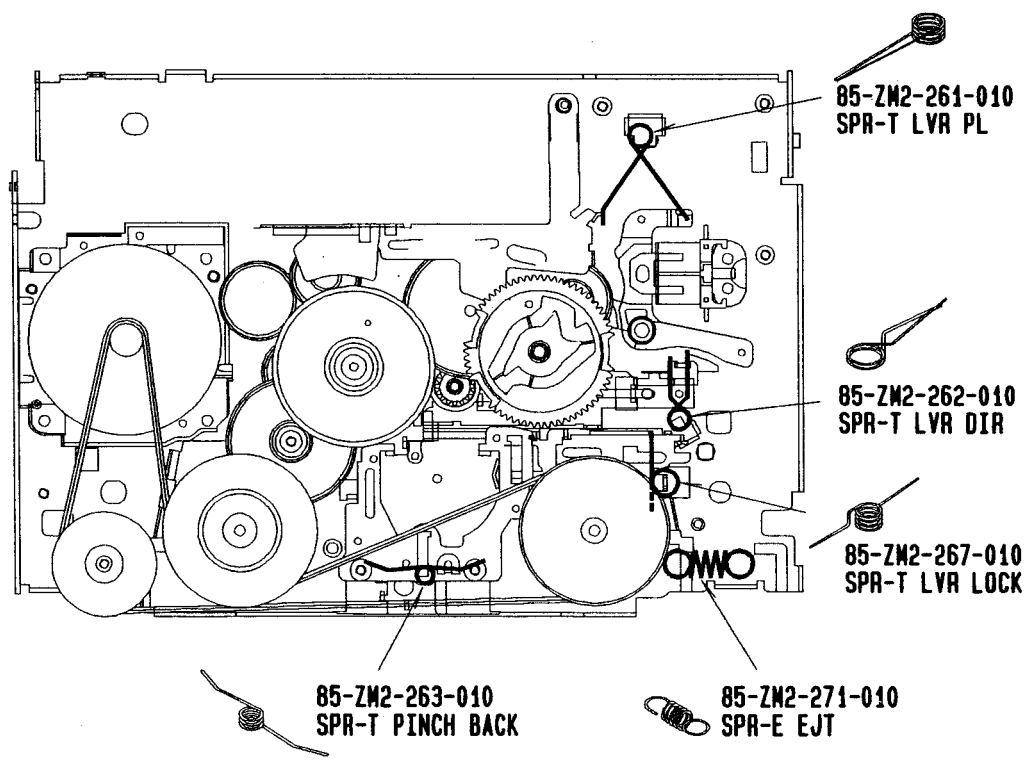
| REF. NO | PART NO. | カンリ NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 85-ZM2-201-110 | | OUT-SERT ASSY |
| 2 | 85-ZM2-265-010 | | SPR-T PINCH L |
| 3 | 85-ZM2-247-110 | | ARM PINCH ASSY L |
| 4 | 85-ZM2-264-010 | | SPR-T HEAD BACK |
| 5 | 85-ZM2-266-010 | | SPR-T PINCH R |
| 6 | 85-ZM2-249-110 | | ARM PINCH ASSY R |
| 7 | 85-ZM2-269-010 | | SPR-C GEAR REEL |
| 8 | 80-ZM4-231-210 | | REEL CAP,R |
| 9 | 80-ZM4-230-310 | | REAL CAP,L |
| 10 | 84-ZM1-280-010 | | PULLY PM |
| 11 | M8-5ZS-291-000 | | ABL-52 P1 |
| 12 | 85-ZM2-307-010 | | SPR-P,MOT(S2) |
| 13 | 84-ZM1-383-010 | | THRUST PLATE(B) |
| 14 | 85-ZM2-228-110 | | GEAR REEL |
| 15 | 85-ZM2-223-010 | | GEAR IDL B |
| 16 | 80-ZM4-277-110 | | REFL,AUTO |
| 17 | 85-ZM2-261-010 | | SPR-T LVR PL |
| 18 | 85-ZM2-239-010 | | LVR DIR ASSY |
| 19 | 85-ZM2-601-010 | | SOL,TDK |
| 21 | 85-ZM2-262-010 | | SPR-T LVR DIR |
| 22 | 85-ZM2-219-110 | | LINK EJECT |
| 23 | 85-ZM2-214-010 | | LVR LOCK |
| 24 | 85-ZM2-267-010 | | SPR-T LVR LOCK |
| 25 | 85-ZM2-211-010 | | LVR HEAD |
| 26 | 85-ZM2-263-010 | | SPR-T PINCH BACK |
| 27 | 85-ZM2-216-110 | | LINK HEAD ASSY |
| 28 | 85-ZM2-213-010 | | LVR PINCH R |
| 29 | 85-ZM2-212-010 | | LVR PINCH L |
| 30 | 85-ZM2-222-110 | | GEAR IDL A |
| 31 | 85-ZM2-204-010 | | LVR FR |
| 32 | 85-ZM2-221-010 | | GEAR CAM |
| 33 | 85-ZM2-205-010 | | LVR GEAR FR ASSY |
| 34 | 85-ZM2-227-010 | | GEAR CAM C |
| 35 | 85-ZM2-207-110 | | LVR PL |
| 36 | 85-ZM2-271-010 | | SPR-E,EJT |
| 37 | 85-ZM2-232-110 | | GEAR SLIP ASSY |
| 38 | 85-ZM2-241-010 | | FLY-WHL ASSY L |
| 39 | 85-ZM2-281-010 | | FLY-WHL ASSY R |
| 40 | 85-ZM2-237-010 | | BELT |
| 41 | 85-ZM2-260-010 | | CAP CAPSTAN |
| A | 87-067-824-010 | | S-SCREW,V+1.4-3.7 |
| B | 87-067-693-010 | | PW,3-0.8-0.25 SLT |
| C | 87-067-815-110 | | VT+1.4-3(HL) |
| E | 87-067-972-010 | | PW,1.05-3-0.25 SLT |
| F | 85-ZM2-312-010 | | PW1.1-2.5-0.25C |
| G | 87-067-860-010 | | PW,3-0.95-0.4 |
| H | 87-067-569-010 | | PW,0.83-2.5-0.25 SLT |
| I | 87-067-789-010 | | RW,1.6-3.45-0.25 |
| J | 87-078-224-010 | | PW,1.23-3-0.25P SLT |

SPRING APPLICATION POSITION



## ■ ACCESSORIES／PACKAGE LIST

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If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

| REF. NO | PART NO. | カンリ NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 87-B30-003-010 | | BAT,MHB-3 |
| 2 | 82-HK3-951-010 | | CARRYING,CASE |
| 3 | 87-B30-035-010 | | CHARGER,RB-MH3E<AE1S> |
| 3 | 87-B30-034-010 | | CHARGER,RB-MH3K<AK1S> |
| 4 | 85-HK3-951-110 | | HEADPHONE,HP-RC750 |
| 5 | 85-HK3-905-010 | | IB,ESC |
| 6 | 85-HK3-906-010 | | IB,GFI<AE1S> |
| 7 | 09-028-270-010 | | BATT BOX ASSY |

# REFERENCE NAME LIST

## ELECTRICAL SECTION

| DESCRIPTION | REFERENCE NAME |
|---|---|
| ANT | ANTENNAS |
| C- | CHIP |
| C-CAP | CAP, CHIP |
| C-CAP TN | CAP, CHIP TANTALUM |
| C-COIL | COIL, CHIP |
| C-DI | DIODE, CHIP |
| C-DIODE | DIODE, CHIP |
| C-FET | FET, CHIP |
| C-FOTR | FILTER, CHIP |
| C-JACK | JACK, CHIP |
| C-LED | LED, CHIP |
| C-RES | RES, CHIP |
| C-SFR | SFR, CHIP |
| C-SLIDE SW | SLIDE SWITCH, CHIP |
| C-SW | SWITCH, CHIP |
| C-TR | TRANSISTOR, CHIP |
| C-VR | VOLUME, CHIP |
| C-ZENER | ZENER, CHIP |
| CAP, CER | CAP, CERA-SOL |
| CAP, E | CAP, ELECT |
| CAP, M/F | CAP, FILM |
| CAP, TC | CAP, CERA-SOL |
| CAP, TC-U | CAP, CERA-SOL SS |
| CAP, TN | CAP, TANTALUM |
| CERA FIL | FILTER, CERAMIC |
| CF | FILTER, CERAMIC |
| DL | DELAY LINE |
| E/CAP | CAP, ELECT |
| FILT | FILTER |
| FLTR | FILTER |
| FUSE RES | RES, FUSE |
| MOT | MOTOR |
| P-DIODE | PHOTO DIODE |
| P-SNSR | PHOTO SENSER |
| P-TR | PHOTO TRANSISTOR |
| POLY VARI | VARIABLE CAPACITOR |
| PPCAP | CAP, PP |
| PT | POWER TRANSFORMER |
| PTR, RES | PTR, MELF |
| RC | REMOTE CONTROLLER |
| RES NF | RES, NON-FLAMMABLE |
| RESO | RESONATOR |
| SHLD | SHIELD |
| SOL | SOLENOID |
| SPKR | SPEAKER |
| SW, LVR | SWITCH, LEVER |
| SW, RTRY | SWITCH, ROTARY |
| SW, SL | SWITCH, SLIDE |
| TC CAP | CAP, CERA-SOL |
| THMS | THERMISTOR |
| TR | TRANSISTOR |
| TRIMMER | CAP, TRIMMER |
| TUN-CAP | VARIABLE CAPACITOR |
| VIB, CER | RESONATOR, CERAMIC |
| VIB, XTAL | RESONATOR, CRYSTAL |
| VR | VOLUME |
| ZENER | DIODE, ZENER |
| サージサプレッサ | SERGESUPPRESSOR |
| セラコン | CAP,CERA |

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| 番号 | 連絡内容 |
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## MECHANICAL SECTION

| DESCRIPTION | REFERENCE NAME |
|---|---|
| ADHESHIVE | SHEET ADHESHIVE |
| AZ | AZIMUTH |
| BAR-ANT | BAR-ANTENNA |
| BAT | BATTERY |
| BATT | BATTERY |
| BRG | BEARING |
| BTN | BUTTON |
| CAB | CABINET |
| CASS | CASSETTE |
| CHAS | CHASSIS |
| CLR | COLLAR |
| CONT | CONTROL |
| CRSR | CURSOR |
| CU | CUSHION |
| CUSH | CUSHION |
| DIR | DIRECTION |
| DUBB | DUBBING |
| FL | FRONT LOADING |
| FLY-WHL | FLYWHEEL |
| FR | FRONT |
| FUN | FUNCTION |
| G-CU | G-CUSHION |
| HDL | HANDOL |
| HIMERON | CLOTH |
| HINGE, BAT | HINGE, BATTERY |
| HLDR | HOLDER |
| HT-SINK | HEAT SINK |
| IB | INSTRUCTION BOOKLET |
| IDLE | IDLER |
| IND, L-R | INDICATOR, L-R |
| KEY, CONT | KEY, CONTROL |
| KEY, PRGM | KEY, PROGRAM |
| KNOB, SL | KNOB, SLIDE |
| LBL | LABEL |
| LID, BATT | LID, BATTERY |
| LID, CASS | LID, CASSETTE |
| LVR | LEVER |
| P-SP | P-SPRING |
| PANEL, CONT | PANEL, CONTROL |
| PANEL, FR | PANEL, FRONT |
| PRGM | PROGRAM |
| PULLY, LOAD MO | PULLY, LOAD MOTOR |
| RBN | RIBBON |
| S- | SPECIAL |
| SEG | SEGMENT |
| SH | SHEET |
| SHLD-SH | SHIELD-SHEET |
| SL | SLIDE |
| SP | SPRING |
| SP-SCREW | SPECIAL-SCREW |
| SPACER, BAT | SPACER, BATTERY |
| SPR | SPRING |
| SPR-P | P-SPRING |
| SPR-PC-PUSH | P-SPRING, C-PUSH |
| T-SP | T-SPRING |
| TERM | TERMINAL |
| TRIG | TRIGGER |
| TUN | TUNING |
| VOL | VOLUME |
| W | WASHER |
| WHL | WHEEL |
| WORM-WHL | WORM-WHEEL |
| ジグアーム | ARM,SHAFT |
| ジグガイド | GUIDE,SHAFT |
| ストラップ | STRAP |
| トクナベ | S-SCREW |
| ヒンジ | HINGE |
| ヒンジビス | S-SCREW |
| ビスセレート | SCREW,SERRART |

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